

CHAPTER FIVE

CLUTCH AND TRANSMISSION

CENTRIFUGAL CLUTCH

Removal/Disassembly/Assembly/
Installation (1987 Fourtrax 70)

The centrifugal clutch removal, disassembly, assembly and installation are the same as on previous models with the exception of the right-hand crankcase cover.

Remove and install the right-hand crankcase cover as described in this supplement.

4-SPEED TRANSMISSION AND
INTERNAL SHIFT MECHANISM
(FOURTRAX 70)

Removal/Installation

The removal and installation procedures are the same as the 70 cc models described in Chapter Five in the main body of this book.

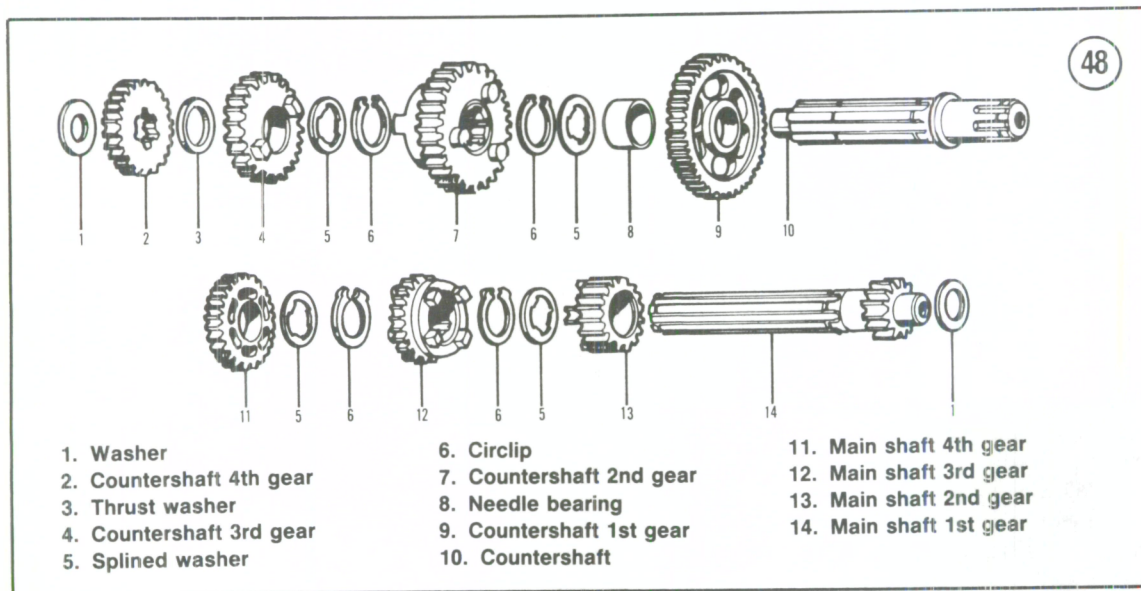
Main Shaft
Disassembly/Inspection/Assembly

Refer to **Figure 48** for this procedure

NOTE

A helpful "tool" that should be used for transmission disassembly is a large egg flat (the type restaurants get their eggs in). As you remove a part from the shaft, set it in one of the depressions in the same position from which it was removed. This is an easy way to remember the correct relationship of all parts.

1. Clean the shaft as described under *Preliminary Transmission Inspection, All Models* in Chapter Five in the main body of this book.



2. Slide off the 4th gear.
3. Slide off the splined washer and remove the circlip.
4. Slide off the 3rd gear.
5. Remove the circlip and slide off the splined washer.
6. Slide off the 2nd gear.
7. From the other end of the shaft, remove the thrust washer.
8. Check each gear for excessive wear, burrs, pitting or chipped or missing teeth. Make sure the lugs on the gears are in good condition.

NOTE

Defective gears should be replaced. It is a good idea to replace the mating gear on the countershaft even though it may not show as much wear or damage.

NOTE

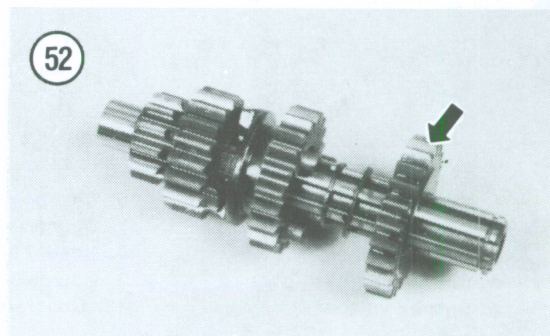
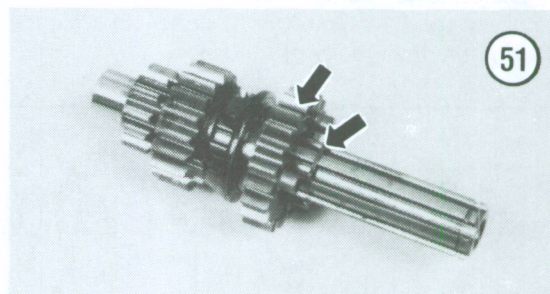
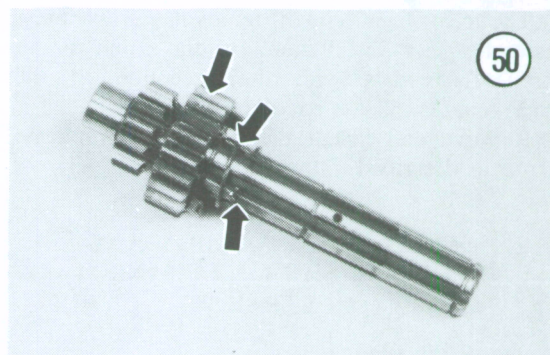
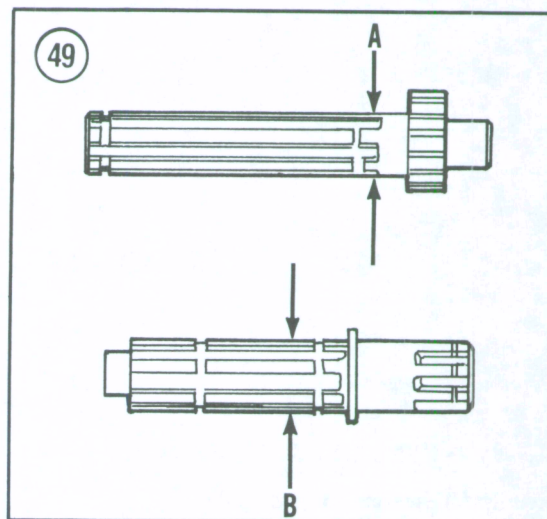
The 1st gear is part of the shaft. If the gear is defective the shaft must be replaced.

9. Make sure that all gears slide smoothly on the main shaft splines.
10. Measure the outside diameter of the raised portion of the splines at location "A" shown in **Figure 49**. Refer to the dimension listed in **Table 7**. If the shaft is worn to the service limit, the shaft must be replaced.
11. Measure the inside diameter of the 2nd and 4th gears. Refer to dimensions listed in **Table 7**. If the gear(s) are worn to the service limit dimension (or greater) the gear(s) must be replaced.

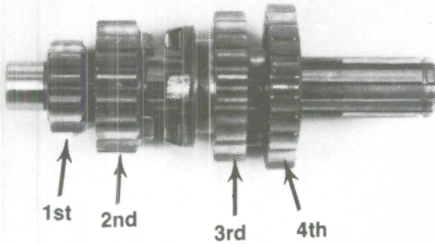
NOTE

It's a good idea to replace all circlips every other time the transmission is disassembled to ensure proper gear alignment.

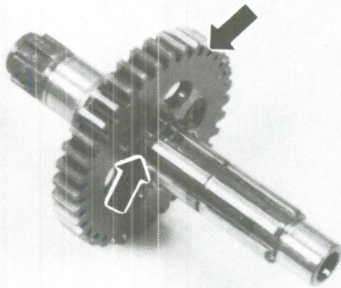
12. Slide on the 2nd gear and install the splined washer and circlip (**Figure 50**).
13. Slide on the 3rd gear and install the circlip and splined washer (**Figure 51**).
14. Slide on the 4th gear (**Figure 52**).
15. Slide the thrust washer onto the other end of the main shaft.
16. Before installation, double check the placement of all gears (**Figure 53**). Make sure the circlips are seated correctly in the countershaft grooves.



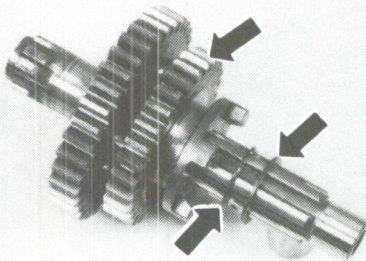
53



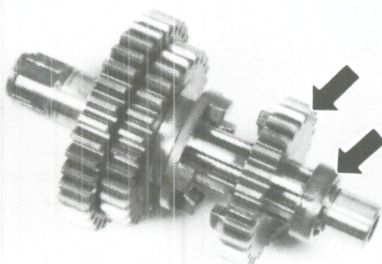
54



55



56



Countershaft Disassembly/Inspection/Assembly

Refer to **Figure 48** for this procedure.

NOTE

Use the same large egg flat (used on the main shaft disassembly) during the countershaft disassembly. This is an easy way to remember the correct relationship of all parts.

1. Clean the shaft as described under *Preliminary Transmission Inspection*, All Models in Chapter Five in the main body of this book.
2. Remove the thrust washer and slide off the 4th gear.
3. Slide off the thrust washer and the 3rd gear.
4. Slide off the splined washer and remove the circlip.
5. Slide off the 2nd gear.
6. Remove the circlip and splined washer and slide off the 1st gear and 1st gear bushing.
7. Check each gear for excessive wear, burrs, pitting or chipped or missing teeth. Make sure the lugs on the gears are in good condition.

NOTE

Defective gears should be replaced. It is a good idea to replace the mating gear on the main shaft even though it may not show as much wear or damage.

8. Make sure that all gears slide smoothly on the countershaft splines.
9. Measure the outside diameter of the raised portion of the splines at location "B" shown in **Figure 49**. Refer to the dimension listed in **Table 7**. If the shaft is worn to the service limit, the shaft must be replaced.
10. Measure the inside diameter of the 1st and 3rd gears. Refer to dimensions listed in **Table 7**. If the gear(s) are worn to the service limit dimension (or greater) the gear(s) must be replaced.
11. Measure the inside diameter and outside diameter of the 1st gear bushing. Refer to dimensions listed in **Table 7**. If the bushing is worn to the service limit dimension (or greater or less) the bushing must be replaced.

NOTE

It's a good idea to replace all circlips every other time the transmission is disassembled to ensure proper gear alignment.

12. Slide on the 1st gear bushing, the 1st gear and splined washer and install the circlip (**Figure 54**).
13. Slide on the 2nd gear, circlip and splined washer (**Figure 55**).
14. Slide on the 3rd gear and the thrust washer (**Figure 56**).

15. Slide on the 4th gear and the thrust washer (Figure 57).

16. Before installation, double check the placement of all gears (Figure 58). Make sure the circlips are seated correctly in the countershaft grooves.

NOTE

After both transmission shafts have been assembled, mesh the 2 assemblies together in the correct position. Check that all gears meet correctly. This is your last chance prior to installing the assemblies into the crankcase; make sure they are correctly assembled.

TRANSMISSION AND INTERNAL SHIFT MECHANISM (ALL OTHER MODELS)

All service procedures for the transmission on all models are the same as on previous models with the exception of the inside dimensions for some of the transmission gears. Refer to Table 7 for standard and service limit dimensions.

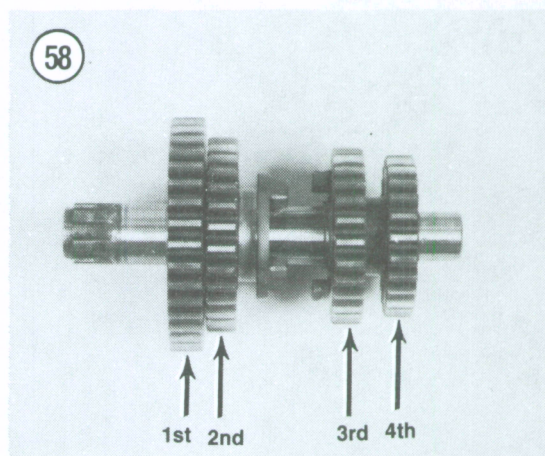
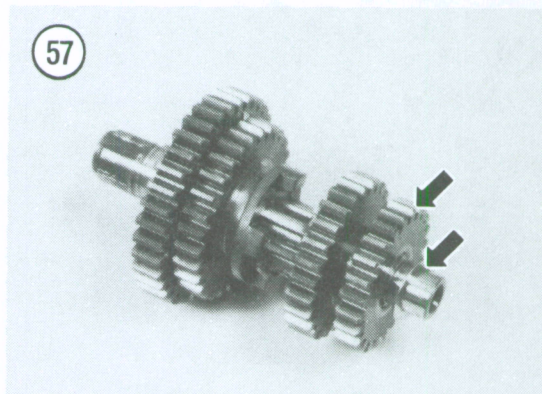
INTERNAL SHIFT MECHANISM (TRX125 AND FOURTRAX 125)

The internal shift mechanism is the same as that used on the prior 90-125 cc engines with the following exceptions.

1. A collar has been added to the shift drum as shown in Figure 59.
2. The clearance between the shift drum and the shift forks is different than on previous models and is listed in Table 8.

SUBTRANSMISSION (TRX125 AND FOURTRAX 125)

The dual-range subtransmission consists of 2 reduction gears and a reverse gear. The unit is driven by the countershaft of the main transmission. It offers 3 different riding ranges or ratios—a low or high forward range and reverse. The low range is just that—low as it gears the engine down for low-end pulling power for use when pulling a trailer or heavy load.



NOTE

On some 1985 TRX125 models, damage to the high speed gear, the super low drive gear and the right-hand shift fork may occur due to improper gear engagement. To solve this problem, Honda has replacement parts available. If your ATV is still covered by the factory warranty, take it to a Honda dealer and have the new parts installed. The models effected by this problem have these engine serial numbers: 2000001-2026374. Models that have had the new parts installed, are identified by a blue mark on the subtransmission chrome cover.

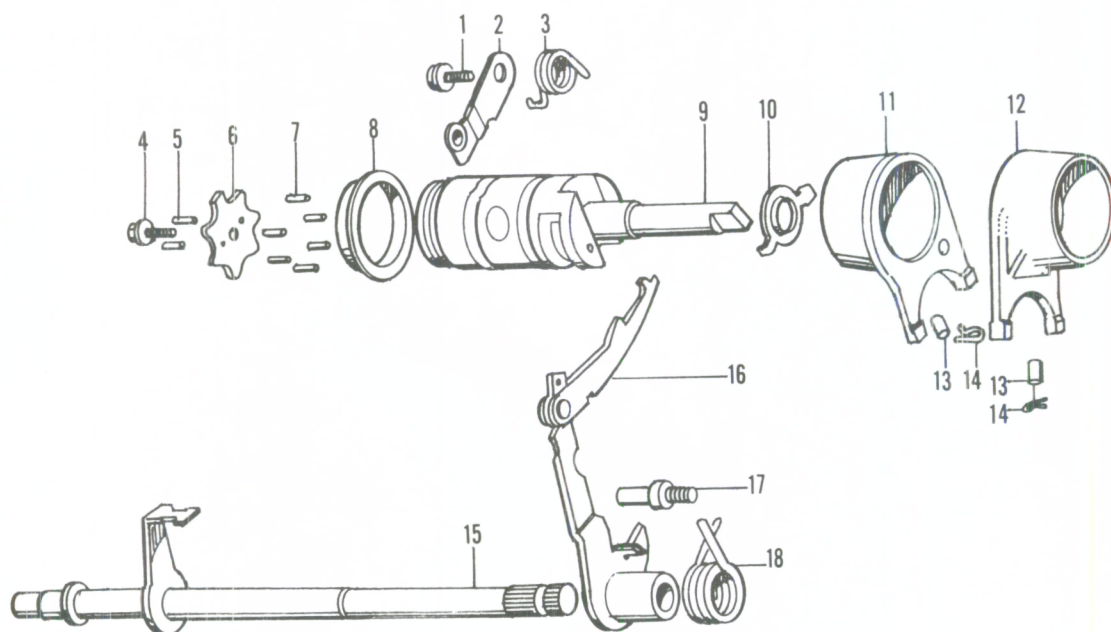
Removal/Disassembly

Refer to Figure 60 for this procedure.

1. Place the ATV on level ground and set the parking brake.
2. Remove the seat and rear fender as described in this supplement.

59

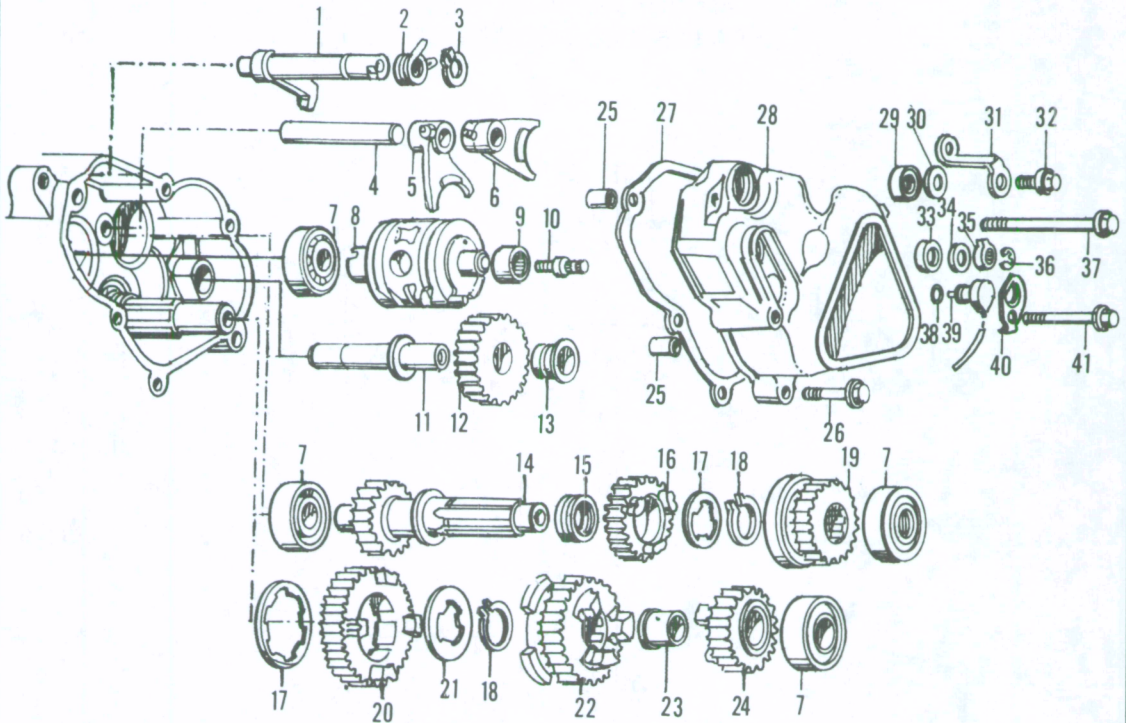
GEARSHIFT MECHANISM (TRX125 AND FOURTRAX 125)



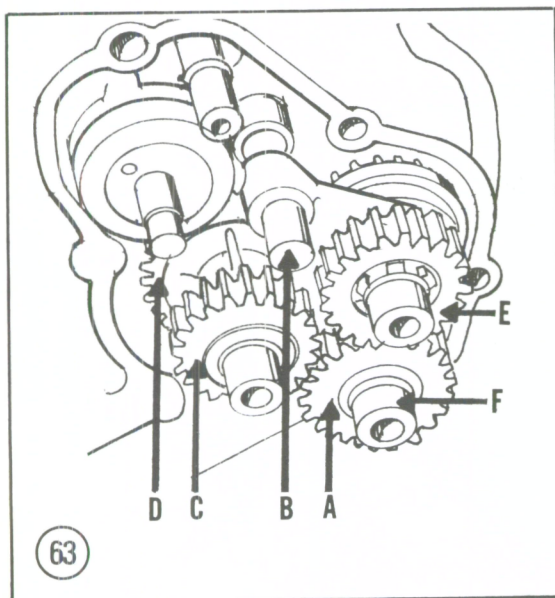
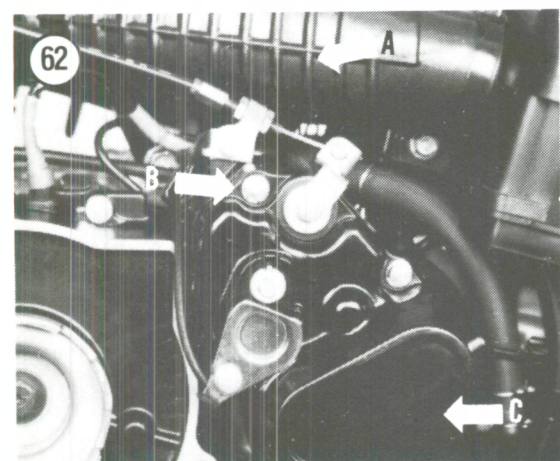
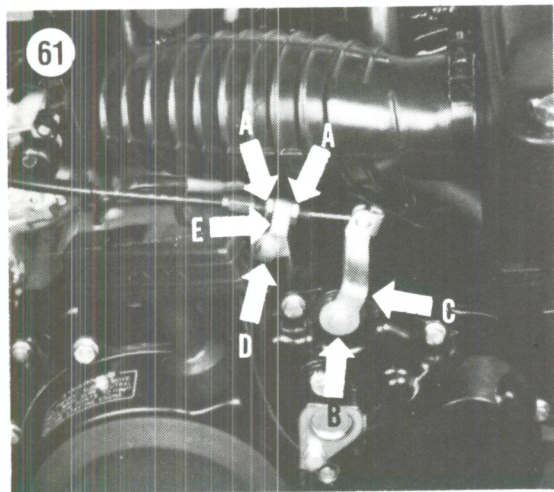
1. Bolt
2. Stopper pawl
3. Spring
4. Bolt
5. Pin
6. Shift drum stopper plate
7. Pin
8. Collar
9. Gearshift drum
10. Neutral indicator contact plate
11. Right-hand gearshift fork
12. Left-hand gearshift fork
13. Guide pin
14. Clip
15. Gearshift shaft
16. Gearshift arm
17. Stud
18. Return spring

60

DUAL RANGE SUBTRANSMISSION (TRX 125 AND FOURTRAX 125)



- | | |
|-----------------------------------|------------------------------------|
| 1. Reverse stopper shaft | 22. Super low drive gear |
| 2. Spring | 23. Reverse drive low gear bushing |
| 3. Circlip | 24. Reverse drive low gear |
| 4. Shift fork shaft | 25. Locating dowel |
| 5. Right-hand shift fork | 26. Bolt |
| 6. Left-hand shift fork | 27. Gasket |
| 7. Bearing | 28. Cover |
| 8. Shift drum | 29. Oil seal |
| 9. Needle bearing | 30. Washer |
| 10. Bolt | 31. Bracket |
| 11. Reverse idle gear shaft | 32. Bolt |
| 12. Reverse idle gear | 33. Oil seal |
| 13. Reverse idle gear bushing | 34. Washer |
| 14. Reduction shaft | 35. Neutral indicator |
| 15. Super low driven gear bushing | 36. E-clip |
| 16. Super low driven gear | 37. Bolt |
| 17. Splined washer | 38. O-ring |
| 18. Circlip | 39. Reverse switch |
| 19. Reverse driven gear | 40. Reverse switch contact plate |
| 20. High speed drive gear | 41. Bolt |
| 21. Splined washer | |

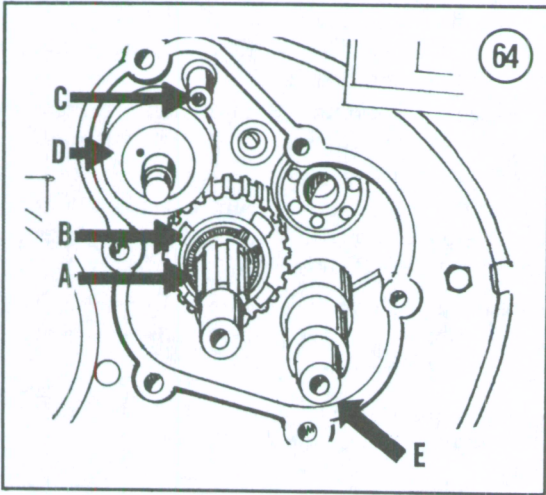


3. Shift the transmission into NEUTRAL.
4. Drain the engine oil as described in Chapter Three in the main body of this book.
5. Loosen the locknut and adjust nut (A, **Figure 61**) on the reverse cable at the subtransmission to allow slack in the cable.
6. Remove the bolt (B, **Figure 61**) securing the reverse stopper arm shaft lever to the shaft and remove the lever (C, **Figure 61**) and washer.
7. Remove the bolt (D, **Figure 61**) securing the reverse cable mounting bracket and remove the bracket (E, **Figure 61**).
8. Loosen the clamping screws on the air cleaner tube and remove the tube (A, **Figure 62**).
9. Disconnect the reverse switch electrical connector.
10. Remove the E-clip, neutral indicator and washer (B, **Figure 62**).
11. Remove the bolts securing the subtransmission cover and remove the cover and gasket (C, **Figure 62**). Don't lose the locating dowels.

NOTE

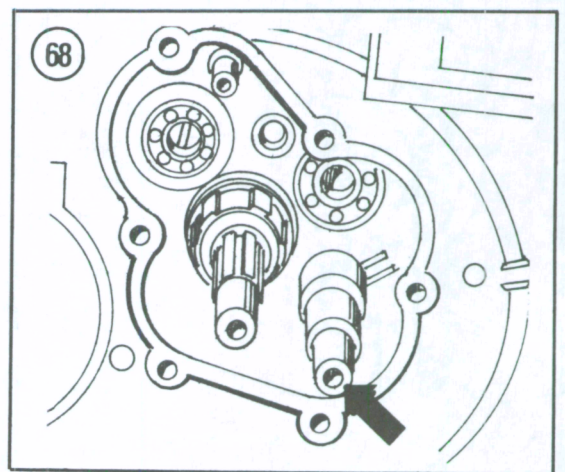
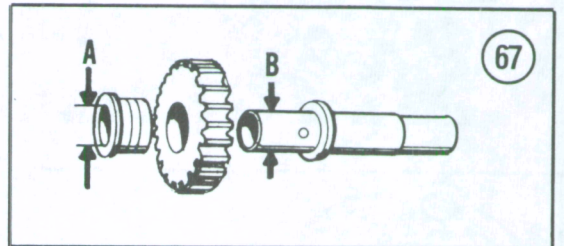
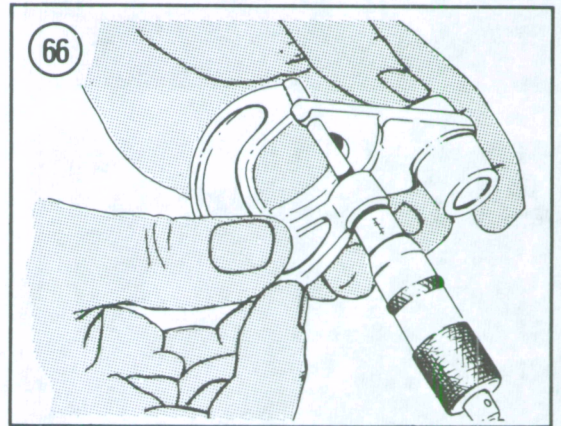
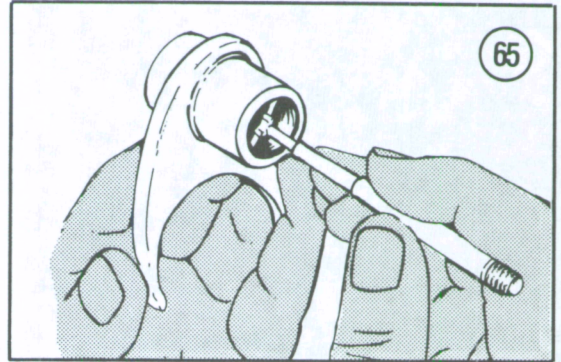
When the cover is removed some of the components may come off with it. The following steps present a sequence where all components stayed in place during cover removal.

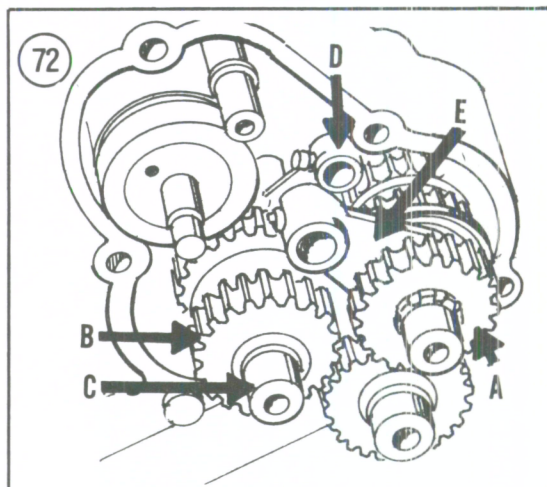
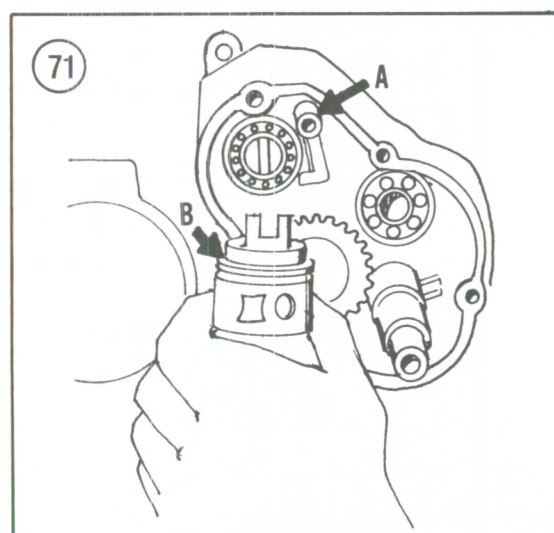
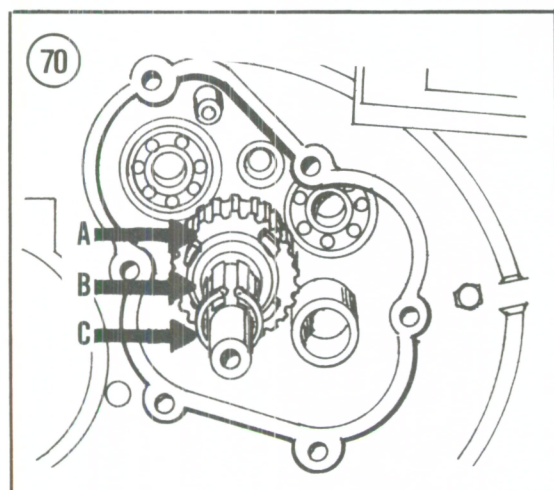
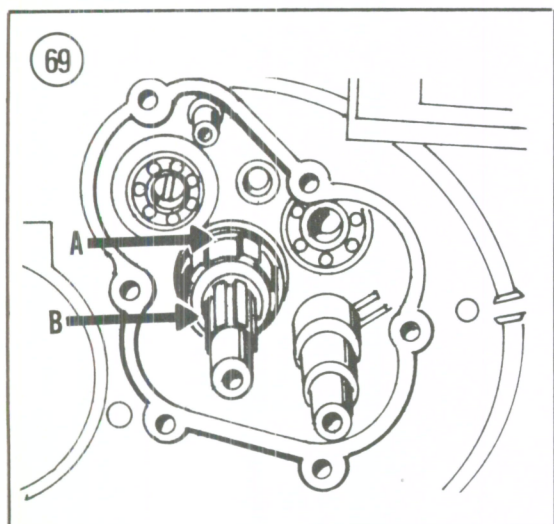
12. Slide off the reverse idle gear and bushing (A, **Figure 63**).
13. Withdraw the shift fork shaft (B, **Figure 63**) and the left-hand shift fork.
14. Slide off the reverse drive low gear (C, **Figure 63**) and the right-hand shift fork.
15. Slide off the super low gear (D, **Figure 63**) from the main transmission's countershaft.
16. Remove the reverse driven gear (E, **Figure 63**) and the reduction shaft (F, **Figure 63**).
17. Remove the circlip (A, **Figure 64**) and slide off the high speed drive gear (B, **Figure 64**) from the main transmission's countershaft.
18. Withdraw the reverse stopper shaft (C, **Figure 64**) and the shift drum (D, **Figure 64**).
19. Withdraw the reverse idle gear shaft (E, **Figure 64**).
20. Clean all parts in solvent and dry with compressed air.



Inspection

1. Inspect each shift fork for signs of wear or cracking. Check for bending and make sure each shift fork slides smoothly on the shaft.
2. Check for any arc-shaped wear or burn marks on the shift forks. This indicates that the shift fork has come in contact with the gear. The fork fingers may have become excessively worn and the fork must be replaced.
3. Measure the outside diameter of the shift fork shaft and the inside diameter of the shift forks (**Figure 65**) with a micrometer or a vernier caliper. Replace if worn to the service limit (or less or greater) listed in **Table 9**.
4. Measure the width of the shift fork fingers with a micrometer or a vernier caliper (**Figure 66**). Replace if worn to the service limit (or less) listed in **Table 9**.
5. Inspect the grooves in the shift drum for wear or roughness. If the groove profiles have excessive wear or damage, replace the shift drum.
6. Measure the inside diameter of the reverse idle gear bushing (A, **Figure 67**), the reverse drive low gear and the super low driven gear. Refer to dimensions listed in **Table 9**. If the bushing is worn to the service limit dimension (or greater) the bushing must be replaced.
7. Measure the outside diameter of the reverse idle gear shaft at location shown in B, **Figure 67**. Refer to the dimension listed in **Table 9**. If the shaft is worn to the service limit (or less), the shaft must be replaced.
8. Check each gear for excessive wear, burrs, pitting or chipped or missing teeth.
9. Check that the engagement lugs on the gears are in good shape. If worn or damaged the gear should be replaced.





10. Inspect the shaft support bearings in the subtransmission cover. Check for roughness, pitting, galling and play by rotating them slowly with your fingers. They should rotate smoothly. If replacement is necessary, refer to *Cover Bearing Replacement* in this supplement.

Assembly/Installation

1. Install the reverse idle gear shaft (Figure 68).
2. Make sure the thrust washer (A, Figure 69) is in place on the drive sprocket bushing (B, Figure 69).
3. Slide on the high speed drive gear (A, Figure 70) and the splined washer (B, Figure 70).
4. Install the circlip (C, Figure 70).
5. Install the reverse stopper shaft.
6. Move the pawl on the reverse stopper shaft (A, Figure 71) out of the way and install the shift drum (B, Figure 71). Align the groove in the shift drum with the guide on the neutral indicator shaft.
7. Assemble the reduction shaft on the work bench as follows:
 - a. Slide on the super low driven gear bushing and the super low driven gear.
 - b. Slide on the splined washer and install the circlip.
 - c. Install the reverse driven gear.
8. Install the reduction shaft assembly (A, Figure 72).
9. Slide the reverse drive low gear bushing and the reverse drive low gear (B, Figure 72) onto the main transmission's countershaft (C, Figure 72).

NOTE

The right-hand shift fork is marked "V6R" and the left-hand shift fork is marked "V6L." The marks must face toward the outside of the engine when installed.

10. Install the right-hand shift fork (D, **Figure 72**) then the left-hand shift fork (E, **Figure 72**). Make sure they are indexed properly into their respective gears.
11. Install the shift fork shaft (A, **Figure 73**).
12. Insert the reverse idle gear bushing into the reverse idle gear and install this assembly onto the idle gear shaft (B, **Figure 73**).
13. If removed, install the locating dowels (A, **Figure 74**). Install a new gasket (B, **Figure 74**).
14. Install the subtransmission cover and tighten the bolts securely.
15. Onto the neutral indicator shaft, install the washer. Align the flats on the neutral indicator with the flats on the shaft and install the neutral indicator and the E-clip (B, **Figure 62**).
16. Connect the reverse switch electrical connector.
17. Install the air cleaner tube and tighten the clamping screws at each end of the tube.
18. Install the reverse cable mounting bracket and bolt (D, **Figure 61**). Tighten the bolt securely.
19. Install the bolt, washer and the reverse stopper arm shaft lever onto the shaft (B, **Figure 61**).
20. Refill the engine with the recommended type and quantity of engine oil as described in Chapter Three in the main body of this book.
21. Adjust the reverse cable as described in the Chapter Three section of this supplement.
22. Install the seat and rear fender as described in this supplement.

Cover Bearing Replacement

Special tools are required for removal of both shaft support bearings in the cover.

Due to the number of special tools required, it may be less expensive to have the bearings replaced by a dealer. Considerable money can be saved by removing the cover yourself and taking it in for bearing replacement.

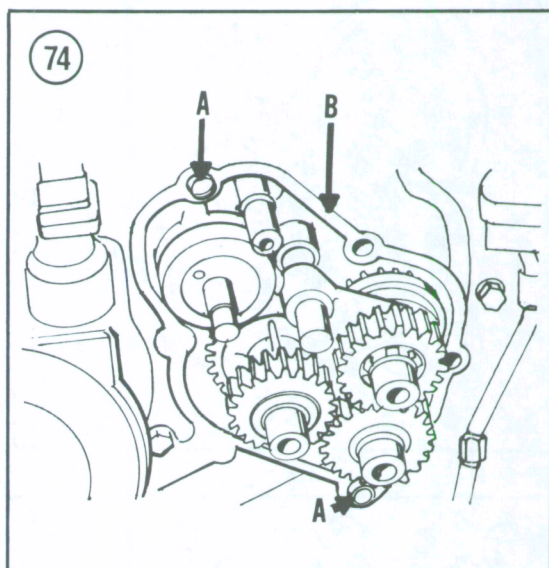
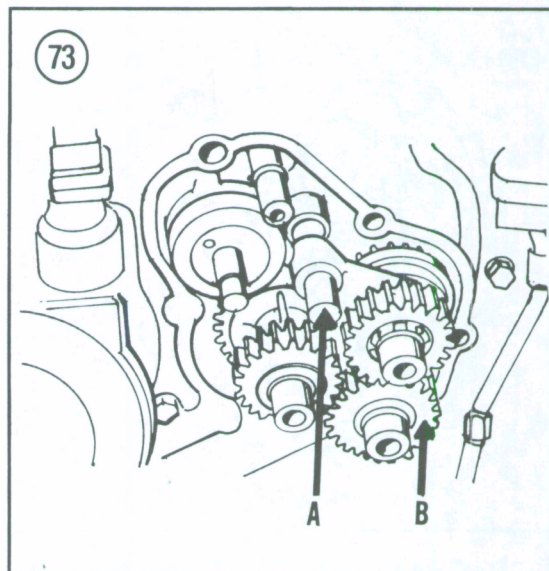


Table 7 TRANSMISSION SPECIFICATIONS

Item	Standard	Service limit
ATC70		
Transmission gears ID		
Main shaft		
2nd & 4th gear	17.016-17.043 mm (0.6699-0.6710 in.)	17.10 mm (0.673 in.)
Countershaft		
1st gear	17.006-17.018 mm (0.6695-0.6700 in.)	17.07 mm (0.672 in.)
3rd gear	17.016-17.043 mm (0.6699-0.6710 in.)	17.1. mm (0.673 in.)

(continued)

Table 7 TRANSMISSION SPECIFICATIONS (continued)

Item	Standard	Service limit
FOURTRAX 70		
Transmission gears ID		
Main shaft		
2nd & 4th gear	17.016-17.043 mm (0.6699-0.6710 in.)	17.10 mm (0.673 in.)
Countershaft		
1st gear	20.020-20.053 mm (0.7882-0.7895 in.)	20.10 mm (0.791 in.)
3rd gear	17.016-17.043 mm (0.6699-0.6710 in.)	17.1 mm (0.673 in.)
Countershaft 1st gear bushing ID	17.000-17.018 mm (0.6693-0.6700 in.)	17.04 mm (0.671 in.)
OD	19.979-20.000 mm (0.7866-0.7874 in.)	19.63 mm (0.773 in.)
Main shaft OD at location "A"	16.983-16.994 mm (0.6686-0.6691 in.)	16.95 mm (0.667 in.)
Countershaft OD at location "B"	16.966-16.984 mm (0.6680-0.6687 in.)	16.95 mm (0.667 in.)
ATC110, ATC125M, TRX125 and FOURTRAX 125		
Transmission gears ID		
Main shaft		
2nd gear	18.000-18.018 mm (0.7087-0.7094 in.)	18.08 mm (0.712 in.)
4th gear	20.000-20.021 mm (0.7874-0.7882 in.)	20.10 mm (0.791 in.)
Countershaft		
1st & 3rd gear	14.000-14.027 mm (0.5512-0.5522 in.)	14.10 mm (0.555 in.)

Table 8 SHIFT FORK AND SHAFT SPECIFICATIONS

Item	Standard	Wear limit
Shift fork ID		
Fourtrax 70	34.000-34.025 mm (1.3386-1.3396 in.)	34.07 mm (1.341 in.)
TRX125 and Fourtrax 125	42.075-42.100 mm (1.6565-1.6575 in.)	42.15 mm (1.659 in.)
Shift drum OD		
Fourtrax 70	33.950-33.975 mm (1.3366-1.3376 in.)	33.93 mm (1.336 in.)
TRX125 and Fourtrax 125	41.950-41.975 mm (1.6516-1.6526 in.)	41.80 mm (1.65 in.)
Shift fork finger thickness		
Fourtrax 70	4.86-4.94 mm (0.191-0.195 in.)	4.60 mm (0.18 in.)
TRX125 and Fourtrax 125	5.96-6.04 mm (0.234-0.238 in.)	5.70 mm (0.224 in.)
Shift fork-to-shift drum clearance		
Fourtrax 70	*	
TRX125 and Fourtrax 125	0.150-0.118 mm (0.0059-0.0046 in.)	0.155 mm (0.006 in.)
* Honda does not provide service specifications for this item.		

Table 9 SUBTRANSMISSION SPECIFICATIONS

TRX125 AND FOURTRAX 125		
Item	Standard	Service limit
Gear bushing ID		
Reverse idle gear	15.000-15.018 mm (0.590-0.5913 in.)	15.1 mm (0.59 in.)
Reverse drive low gear	15.000-15.017 mm (0.590-0.5912 in.)	15.1 mm (0.59 in.)
Super low driven gear	20.000-20.021 mm (0.784-0.7882 in.)	20.1 mm (0.79 in.)
Reverse idle gear shaft	14.966-14.984 mm (0.5892-0.5899 in.)	14.93 mm (0.589 in.)
Shift fork ID	10.000-10.015 mm (0.394-0.3943 in.)	10.05 mm (0.396 in.)
Shift fork shaft OD	9.972-9.987 mm (0.3926-0.3932 in.)	9.95 mm (0.392 in.)
Shift fork finger thickness	5.93-6.00 mm (0.233-0.236 in.)	5.8 mm (0.23 in.)

CHAPTER SIX

FUEL AND EXHAUST CARBURETOR SERVICE

Refer to **Table 10** for carburetor specifications and model numbers.

Disassembly/Assembly (Fourtrax 70)

Follow the disassembly and assembly procedure as described under *Disassembly/Assembly Type II* in Chapter Six in the main body of this book. The fuel strainer on the float bowl is the same as the one used on the 1985 ATC125M. Refer to **Table 10** for jet needle clip position.

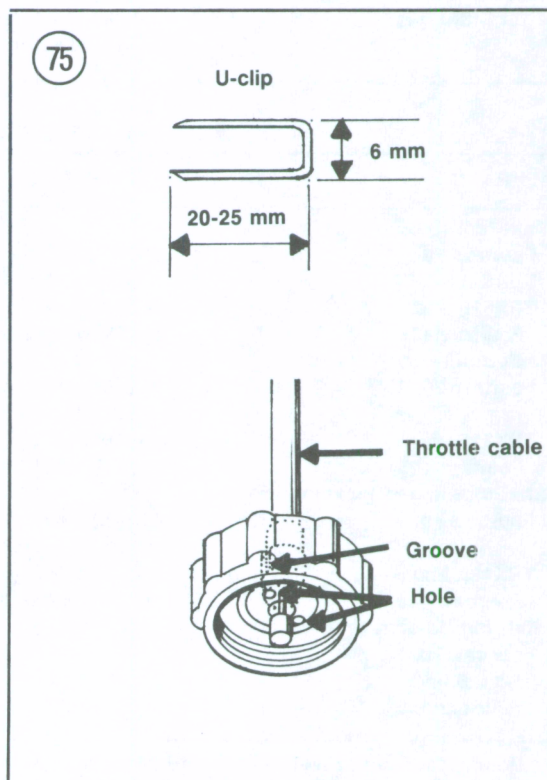
CARBURETOR ADJUSTMENTS

Float Adjustment (TRX125 and Fourtrax 125)

Perform the service procedure as described under *Float Adjustment* in Chapter Six in the main body of this book. Refer to **Table 10** for float height specification.

Needle Jet Adjustment (Fourtrax 70)

Perform the service procedure as described under *Needle Jet Adjustment* in Chapter Six in the main body of this book. Refer to **Table 10** for needle jet position.



Copyright of Honda ATC, TRX, FOURTRX 70-125, 1970-1987 is the property of Penton Media, Inc. ("Clymer") and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.